

2006 BRAKES**Park Brake - Lucerne****SPECIFICATIONS****FASTENER TIGHTENING SPECIFICATIONS****Fastener Tightening Specifications**

Application	Specification	
	Metric	English
Park Brake Cable Guide Nut	6 N.m	53 lb in
Park Brake Pedal Assembly Mounting Nuts	24 N.m	18 lb ft
Park Brake Warning Lamp Switch Bolt	2.0 N.m	18 lb in

DIAGNOSTIC INFORMATION AND PROCEDURES**DIAGNOSTIC STARTING POINT - PARK BRAKE**

Begin the system diagnosis by reviewing the system description and operation. Reviewing the description and operation information will help you determine the correct symptom diagnostic procedure when a malfunction exists. Reviewing the description and operation information will also help you determine if the condition described by the customer is normal operation. Refer to **Symptoms - Park Brake** in order to identify the correct procedure for diagnosing the system and where the procedure is located.

SYMPTOMS - PARK BRAKE

IMPORTANT: Review the system operation in order to familiarize yourself with the system functions.

Refer to **Park Brake System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the park brake system.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

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Park Brake Will Not Hold or Release

PARK BRAKE WILL NOT HOLD OR RELEASE

Park Brake Will Not Hold or Release

Step	Action	Yes	No
1	Were you sent here from the Park Brake Symptom table?	Go to Step 2	<u>Go to Diagnostic Starting Point - Park Brake</u>
2	Inspect the park brake system for proper operation. Refer to <u>Park Brake System Diagnosis</u> . Did you find and correct a condition?	Go to Step 5	Go to Step 3
3	Inspect the disc brake system for proper operation. Refer to <u>Disc Brake System Diagnosis</u> . Did you find and correct a condition?	Go to Step 5	Go to Step 4
4	Inspect the hydraulic brake system for proper operation. Refer to <u>Hydraulic Brake System Diagnosis</u> . Did you find and correct a condition?	Go to Step 5	<u>Go to Diagnostic Starting Point - Park Brake</u>
5	Road test the vehicle in order to confirm proper operation. Refer to <u>Brake System Vehicle Road Test</u> . Is the condition still present?	Go to Step 2	System OK

PARK BRAKE SYSTEM DIAGNOSIS

Park Brake System Diagnosis

Step	Action	Yes	No
DEFINITION: This diagnostic table is designed to diagnose ONLY the components of the PARK brake system in order to determine if the PARK brake system is operating properly. You will be directed by the appropriate Symptom table to go to other brake system diagnostic tables as appropriate.			
1	Were you sent here from a Hydraulic Brake Symptom table?	Go to Step 4	Go to Step 2
2	Were you sent here from a Park Brake Symptom table?	Go to Step 4	Go to Step 3
3	Is the symptom related to the ability of the park brake system to hold and/or release?	Go to <u>Diagnostic Starting Point</u>	

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1	Were you sent here from a Hydraulic	Starting From Step 4 - Hydraulic	Step 2
2	Were you sent here from a Park Brake	- Park Brake	Brakes
	Symptom table? Raise and support the vehicle	Go to Step 4	Go to Step 3
4	<p>with the rear axle supported by jack stands. Refer to <u>Lifting and Jacking the Vehicle</u> .</p> <p>2. With the park brake RELEASED, attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag.</p> <p>Do the rear brakes have a significant amount of drag?</p>		
5	<p>1. Apply the park brake.</p> <p>2. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag.</p> <p>Do the rear brakes have a significant amount of drag?</p>	Go to Step 9	Go to Step 5
6	<p>1. Release the park brake.</p> <p>2. Rotate the rear wheels to check the rear brakes for a significant reduction in the amount of drag.</p> <p>Did the rear brakes exhibit a significant reduction in the amount of drag?</p>	Go to Step 6	Go to Step 7
7	<p>Visually inspect the park brake cable connections and the cables that are accessible on the UNDERSIDE of the vehicle for disconnections and/or damage.</p> <p>Were any of the park brake cables disconnected and/or damaged?</p> <p>Reconnect or replace the park brake cables as necessary. Refer to the following procedures as necessary:</p> <ul style="list-style-type: none"> • <u>Parking Brake Lever Pedal</u> 	Go to Step 18	Go to Step 12
		Go to Step 8	Go to Step 9

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	<p>Visually inspect the cable connections and the cables that are attached to the cable assembly.</p>	Go to Step 8	Go to Step 9
8	<p>The front park brake cable and the park brake pedal are replaced as an assembly.</p> <ul style="list-style-type: none"> • <u>Parking Brake Rear Cable Replacement - Left Side</u> • <u>Parking Brake Rear Cable Replacement - Right Side</u> <p>Did you complete the repair and/or replacement?</p>		
9	<ol style="list-style-type: none"> 1. Remove the rear tire and wheel assemblies. Refer to <u>Tire and Wheel Removal and Installation</u> . 2. Have an assistant apply and release the park brake while you observe both of the brake caliper piston apply levers and the rear park brake cables for free and complete motion during both apply and release. <p>Did the caliper piston apply levers and the rear park brake cables exhibit free and complete motion during both apply and release of the park brake?</p>	Go to Step 10	Go to Step 12
10	<ol style="list-style-type: none"> 1. Apply the park brake. 2. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. <p>Do the rear brakes have a significant amount of drag?</p> <ol style="list-style-type: none"> 1. Release the park brake. 2. Rotate the rear wheels to check the rear brakes for a significant reduction in the amount of drag. 	Go to Step 11	Go to Step 12

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10	<p>Did the rear brakes exhibit a significant reduction in the amount of drag? Check the rear brakes for a significant amount of drag.</p> <p>1. Apply the park brake. Rotate the rear wheels to check for drag.</p>	Go to Step 18	Go to Step 12
10	<p>1. Disconnect the rear park brake cables from the brake caliper. Rakes have a significant amount of drag? Refer to Step 10.</p>	Go to Step 11	Go to Step 11
12	<p><u>Parking Brake Rear Cable Replacement - Left Side</u> and <u>Parking Brake Rear Cable Replacement - Right Side</u>.</p> <p>2. Inspect the intermediate and rear park brake cables for free movement.</p> <p>3. Apply and release the brake caliper piston apply levers. Observe for the following:</p> <ul style="list-style-type: none">• Free motion of the piston apply levers during apply and free and complete return to the stops when released• Free movement of the caliper pistons during apply and free return movement when released <p>Do any of the park brake cables checked require replacement?</p>	Go to Step 14	Go to Step 13
13	<p>Did the brake caliper piston apply levers move freely during apply and freely and completely return to the stops during release; and did the caliper pistons exhibit freedom of movement during apply and release? Replace any of the park brake cables inspected that do not have free movement. Refer to the following procedures:</p>	Go to Step 20	Go to Step 19
14	<ul style="list-style-type: none">• <u>Parking Brake Rear Cable Replacement - Left Side</u>	-	-

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13	Did the brake caliper piston apply levers move freely during apply and freely and completely return to the stops ring release; and did the caliper pistons pistons exhibit freedom of movement Did you complete the replacement?	Go to Step 20	Go to Step 19
15	1. Apply the park brake. 2. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. Do the rear brakes have a significant amount of drag?	Go to Step 16	Go to Step 17
16	1. Release the park brake. 2. Rotate the rear wheels to check the rear brakes for a significant reduction in the amount of drag. Did the rear brakes exhibit a significant reduction in the amount of drag?	Go to Step 18	Go to Step 17
17	1. Disconnect the rear park brake cables from the brake caliper piston apply levers. Refer to <u>Parking Brake Rear Cable Replacement - Left Side</u> and <u>Parking Brake Rear Cable Replacement - Right Side</u> . 2. Have an assistant apply and maintain the caliper piston apply lever to apply the caliper piston. 3. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. 4. Repeat steps 3 and 4 for the other side of the vehicle. 5. Release the caliper piston apply levers. 6. Rotate the rear wheels to check the rear brakes for a significant reduction in the amount of drag.		

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	Did the brake calipers apply and release properly?	Go to Step 18	Go to Step 19
18	<p>1. Reconnect the intermediate and rear park brake cables if they have been disconnected. Refer to the following procedures:</p> <ul style="list-style-type: none">• <u>Parking Brake Rear Cable Replacement - Left Side</u>• <u>Parking Brake Rear Cable Replacement - Right Side</u> <p>2. Grasp the intermediate park brake cable and pull downward to check the amount of tension on the park brake cables.</p> <p>The park brake cables should have a moderate amount of tension.</p> <p>3. Quickly release the intermediate cable and observe for a quick and complete return of the cable.</p>		
19	<p>Did the park brake cables have a moderate amount of tension and exhibit a quick and complete return?</p> <p>Replace the appropriate rear brake caliper. Refer to <u>Rear Brake Caliper Replacement</u>.</p>	Go to Step 21	Go to Step 20
20	<p>Did you complete the replacement?</p> <p>Replace the park brake pedal assembly. Refer to <u>Parking Brake Lever Pedal Assembly Replacement</u>.</p> <p>Did you complete the replacement?</p> <ol style="list-style-type: none">1. Apply the park brake.2. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag.3. Release the park brake.	Go to Step 21	-

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	1. Rotate the rear wheels to check Reconnect the intermediate and rear	Go to Step 21	Go to Step 20
4b	Replace the rear parking brake caliper if it is significantly different in Rear Brake Caliper Replacement . Did the park brake apply and release properly?	Go to Step 21	-
	Replace the park brake pedal assembly properly?	Go to Step 22	Go to Step 4
20 22	Install or Parking Brake Lever Pedal Assembly Replacement . Did you complete the replacement?	Park Brake System OK Return to Step 21	-
	Did you complete the operation?	Symptom Table	

REPAIR INSTRUCTIONS

PARKING BRAKE LEVER PEDAL ASSEMBLY REPLACEMENT

Removal Procedure

The automatic adjustment park brake pedal assembly and the front park brake cable are serviced as a unit. The front park brake cable has no threads and is not adjustable.

1. Ensure the park brake pedal is in the full released position.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

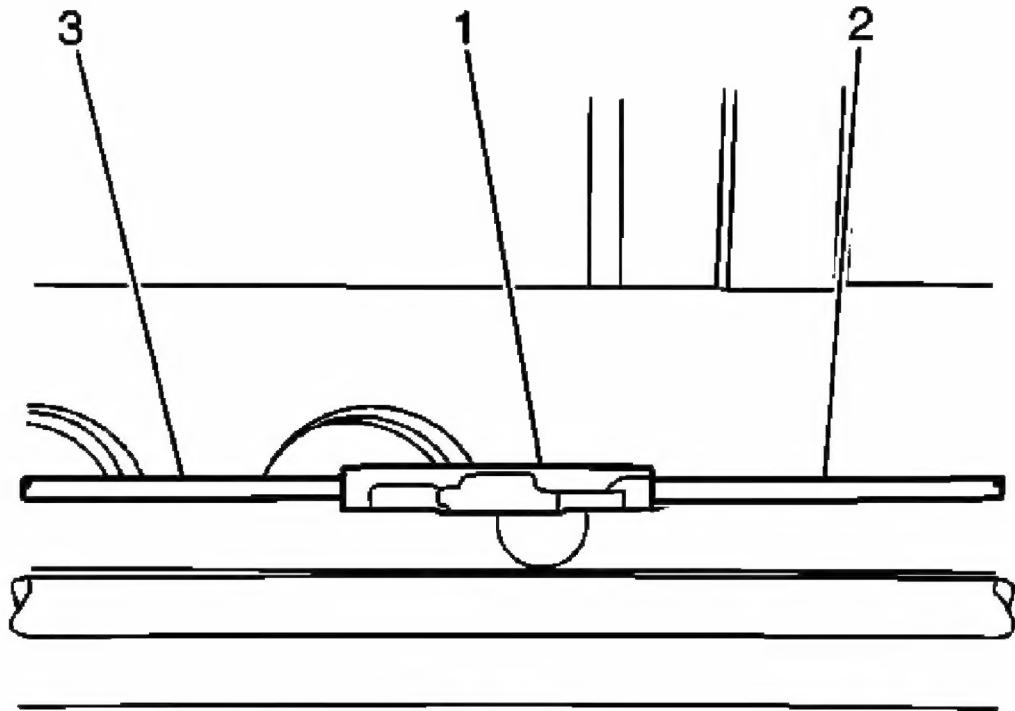


Fig. 1: View Of Park Brake Cable
Courtesy of GENERAL MOTORS CORP.

3. Pull down on the front park brake cable.
4. Remove the cable (3) from the cable connector (1).
5. Lower the vehicle.
6. Remove the left closeout/insulator. Refer to [Instrument Panel Insulator Panel Replacement - Left Side](#) .
7. Remove the left knee bolster. Refer to [Driver Knee Bolster Replacement](#) .
8. Remove the left carpet retainer. Refer to [Front Carpet Retainer Replacement](#) .
9. Pull back the carpet.
10. Release the front park brake cable pass-through grommet from the floor panel.

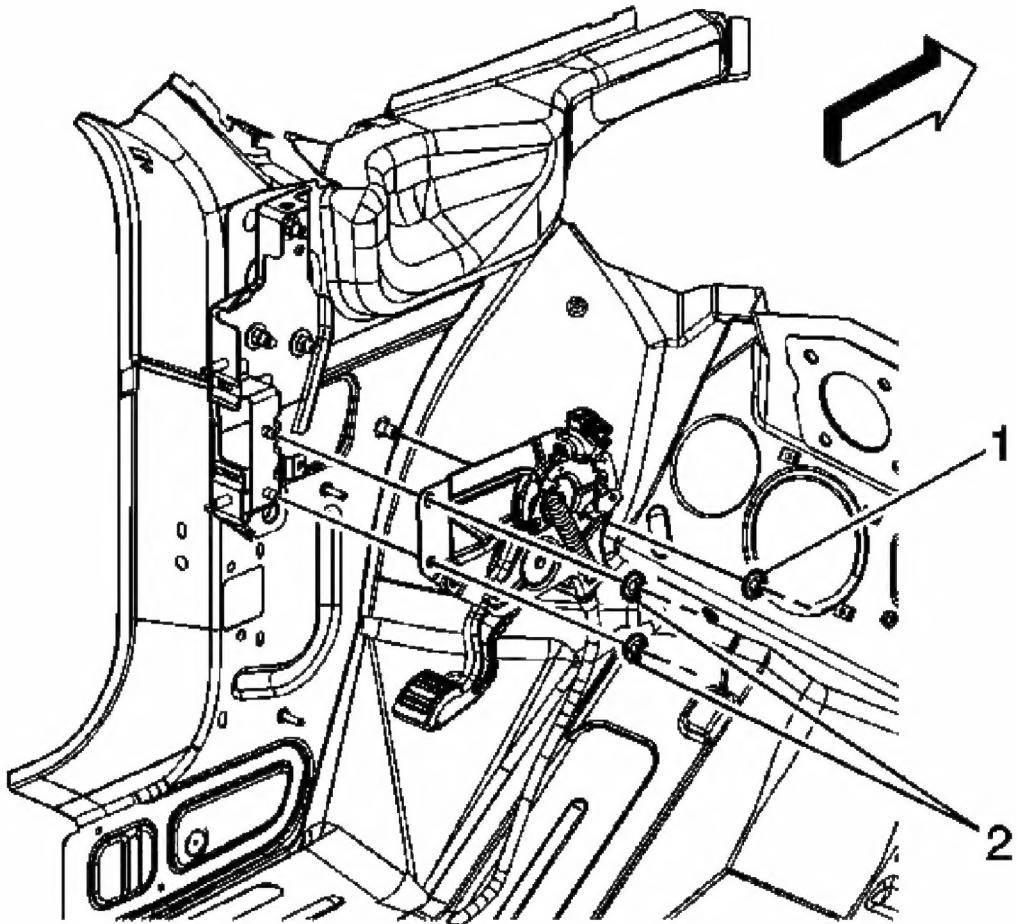


Fig. 2: Identifying Park Brake Pedal Assembly Mounting Nuts
Courtesy of GENERAL MOTORS CORP.

11. Remove the park brake pedal assembly mounting nuts (1, 2).
12. Position the park brake pedal assembly away from the mounting studs.
13. Disconnect the electrical connector from the park brake warning light switch.
14. Remove the park brake pedal assembly.

Installation Procedure

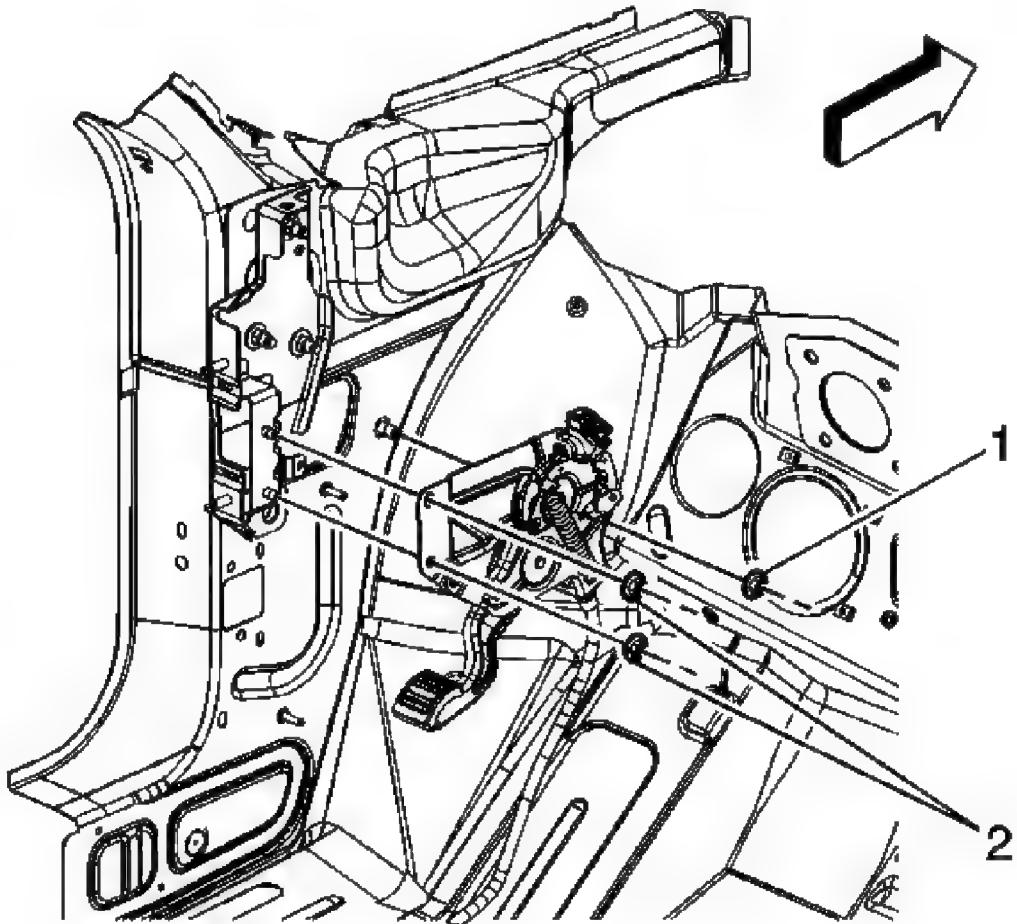


Fig. 3: Park Brake Pedal Assembly Mounting Nuts
Courtesy of GENERAL MOTORS CORP.

1. Connect the electrical connectors to the park brake warning light switch.
2. Install the park brake pedal assembly into the vehicle.

NOTE: Refer to FASTENER NOTICE.

3. Install the park brake pedal assembly mounting nuts (1, 2) to the vehicle.

Tighten: Tighten the park brake pedal assembly mounting nuts to 24 N.m (18 lb ft).

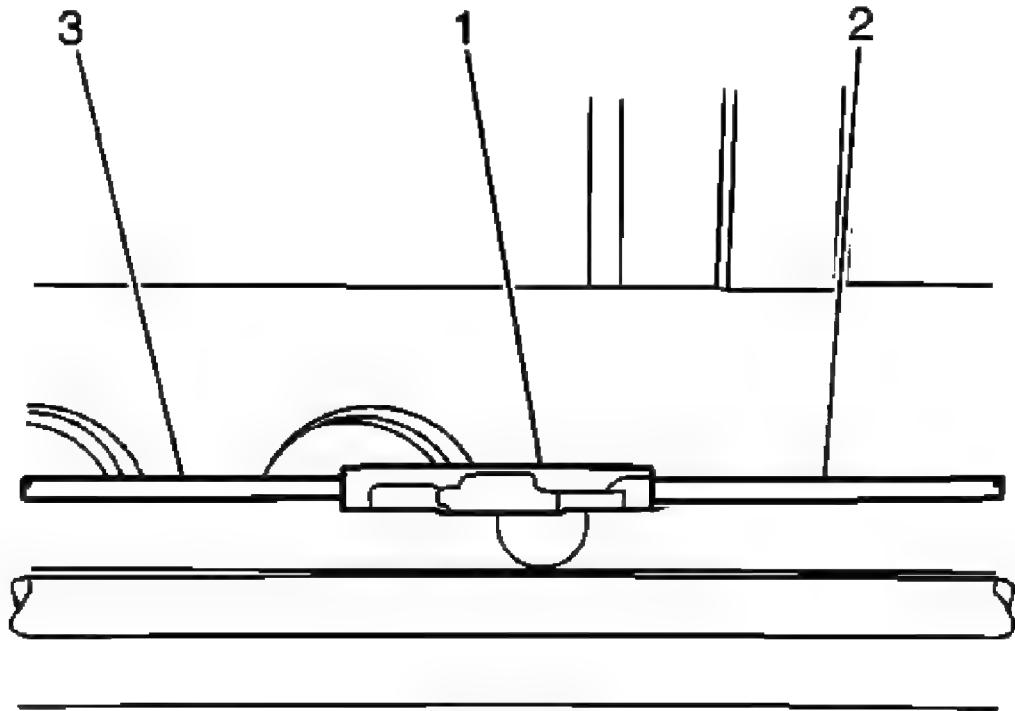


Fig. 4: View Of Park Brake Cable

Courtesy of **GENERAL MOTORS CORP.**

4. Raise the vehicle. Refer to **Lifting and Jacking the Vehicle** .
5. Reconnect the front park brake cable (3) to the cable connector (1).
6. Lower the vehicle.
7. Position and fully seat the front park brake cable pass-through grommet.

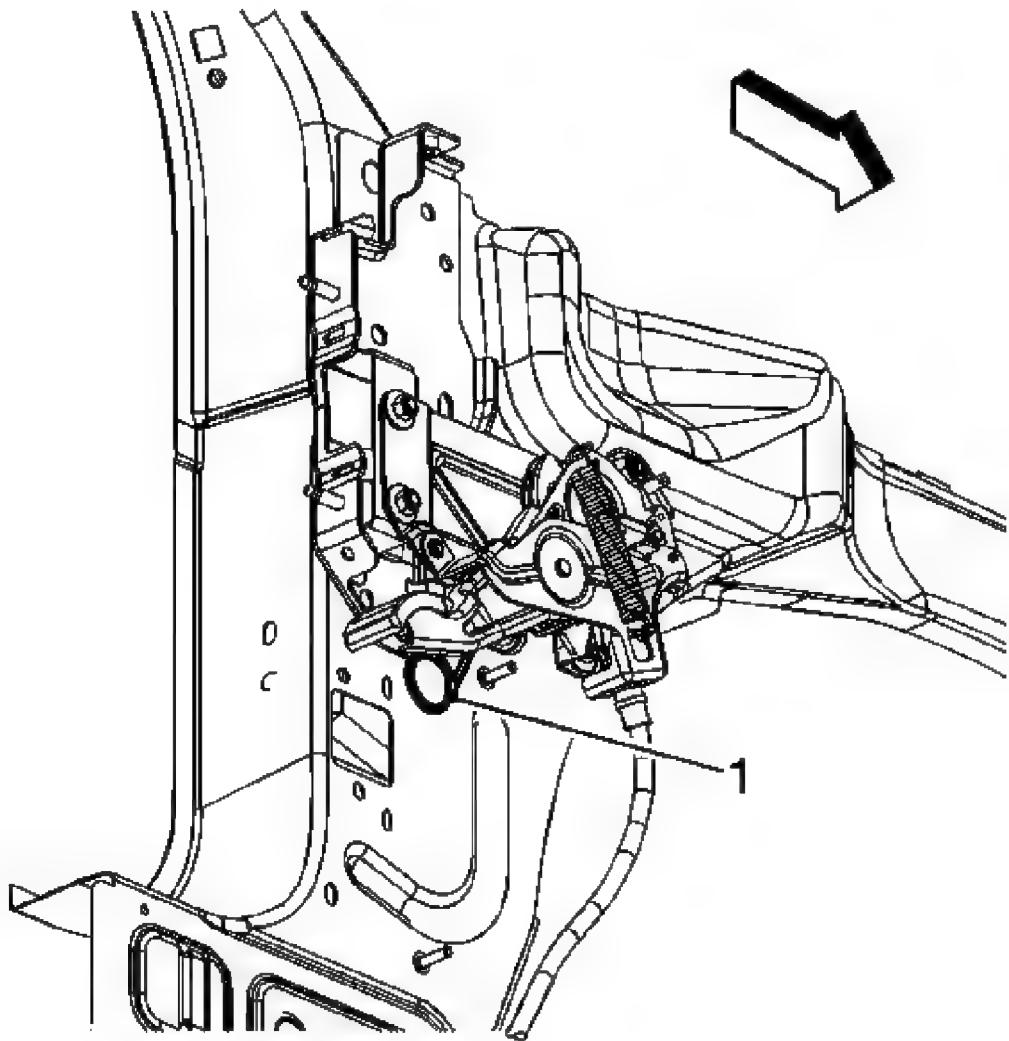


Fig. 5: Park Brake Pedal And Cable Set Pin

Courtesy of GENERAL MOTORS CORP.

8. If installing a new park brake pedal assembly, you must remove the park brake pedal and cable set pin (1).
 - To set the park brake cable tension rotate the tension release pin (1) 80 degrees and then pull down to remove.
 - Apply the park brake pedal 3 full cycles to complete the tension set.
9. Install the left knee bolster. Refer to [**Driver Knee Bolster Replacement**](#).
10. Install the left closeout/insulator. Refer to [**Instrument Panel Insulator Panel Replacement - Left Side**](#).

11. Reposition the carpet.
12. Install the left carpet retainer. Refer to [**Front Carpet Retainer Replacement**](#).

PARKING BRAKE INDICATOR SWITCH REPLACEMENT

Removal Procedure

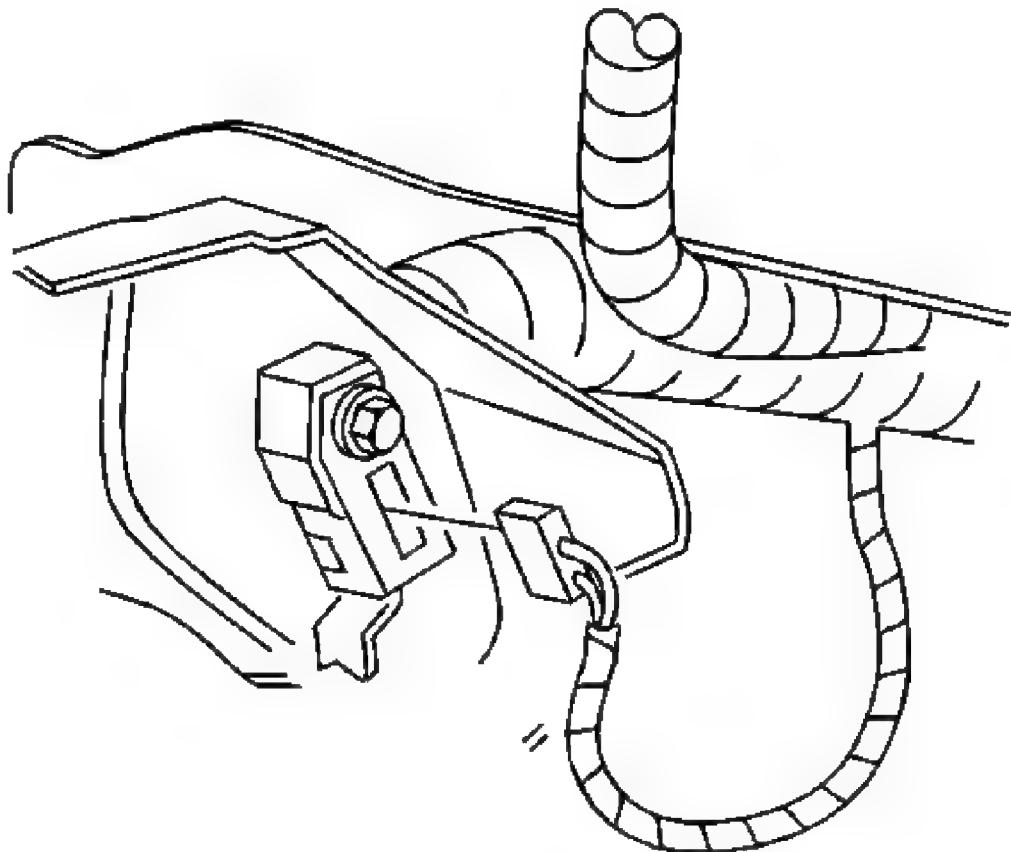


Fig. 6: Identifying Park Brake Warning Switch & Connector
Courtesy of **GENERAL MOTORS CORP.**

1. Remove the left sound insulator panel. Refer to [**Instrument Panel Insulator Panel Replacement - Left Side**](#) in Instrument Panel, Gages and Console.
2. Disconnect the electrical connector from the park brake warning lamp switch.
3. Remove the park brake warning lamp switch retaining bolt.
4. Remove the park brake warning lamp switch.

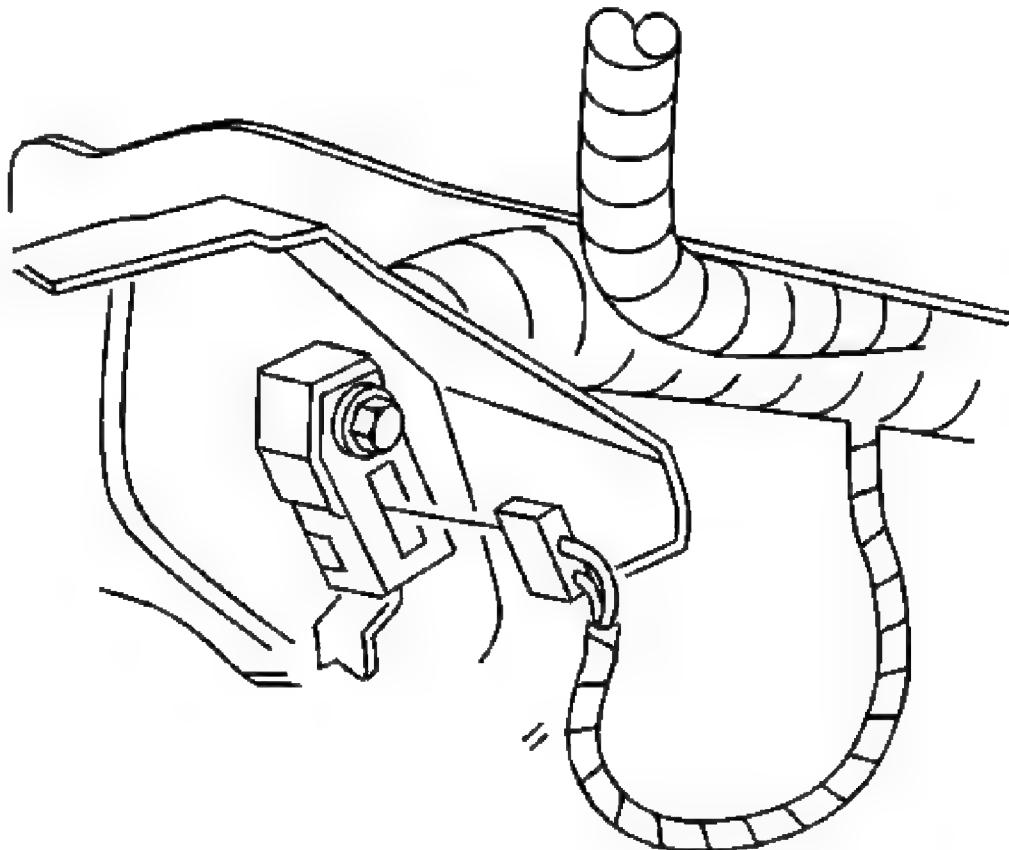


Fig. 7: Identifying Park Brake Warning Switch & Connector
Courtesy of GENERAL MOTORS CORP.

1. Install the park brake warning lamp switch to the park brake lever assembly. Align the alignment pin to locator hole.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the park brake warning lamp switch retaining bolt.

Tighten: Tighten the bolt to 2.0 N.m (18 lb in).

3. Connect the electrical connector to the park brake warning lamp switch.
4. Install the left sound insulator panel. Refer to **Instrument Panel Insulator Panel Replacement - Left Side** in Instrument Panel, Gages and Console.

Tools Required

J 37043 Parking Brake Cable Release Tool. See **Special Tools**.

Removal Procedure

1. Release the park brake.
2. Raise the vehicle. Refer to **Lifting and Jacking the Vehicle**.
3. Remove the tire and wheel. Refer to **Tire and Wheel Removal and Installation**.

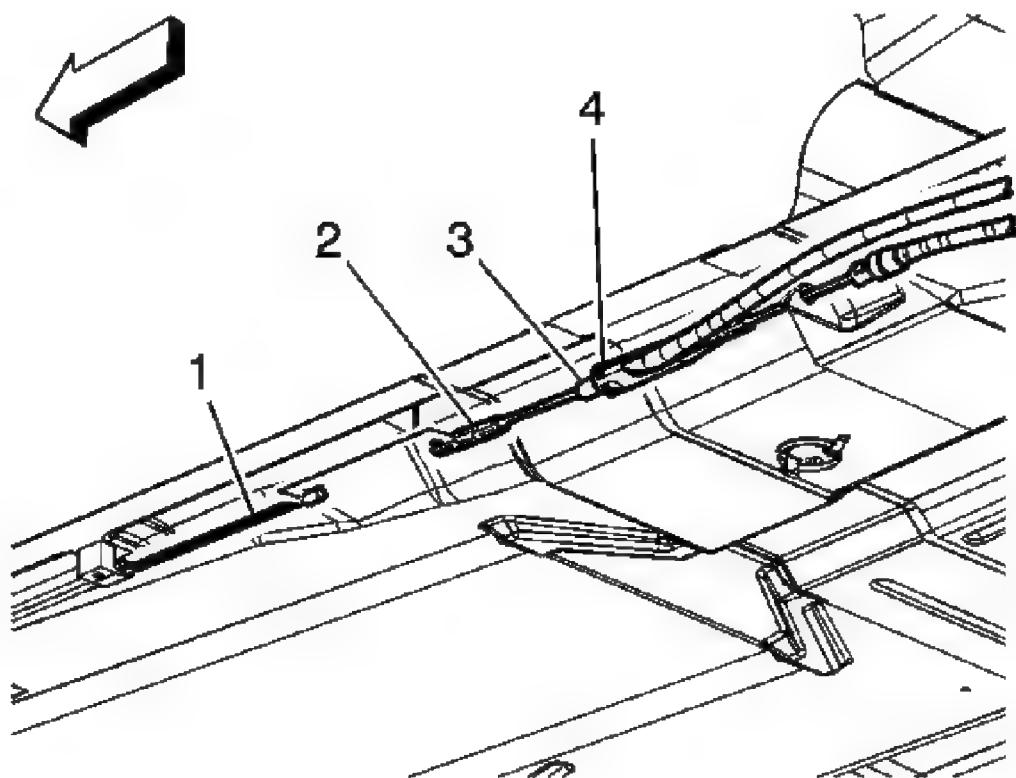


Fig. 8: Removing/Installing Front Park Brake Cable
Courtesy of GENERAL MOTORS CORP.

4. Remove the front brake cable (1) from the connector (2).

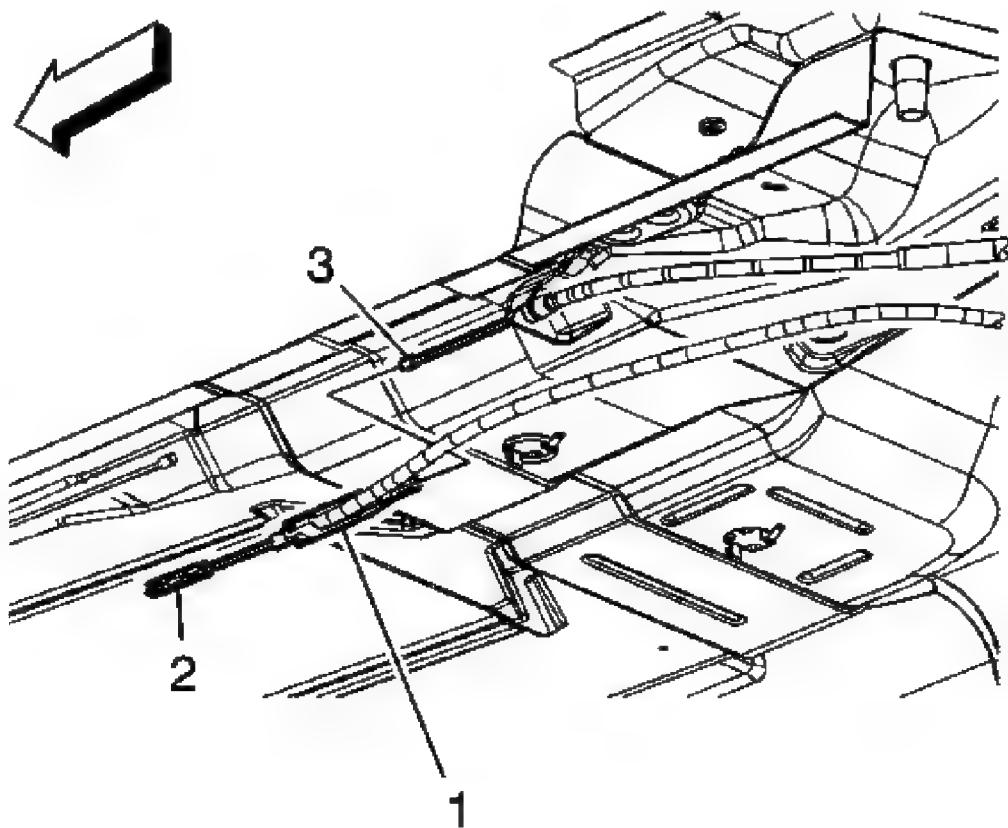


Fig. 9: Removing/Installing Rear Park Brake Cable

Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If the equalizer (1) is damaged, replace the equalizer.

5. Remove the left rear brake cable (3) from the equalizer (1).

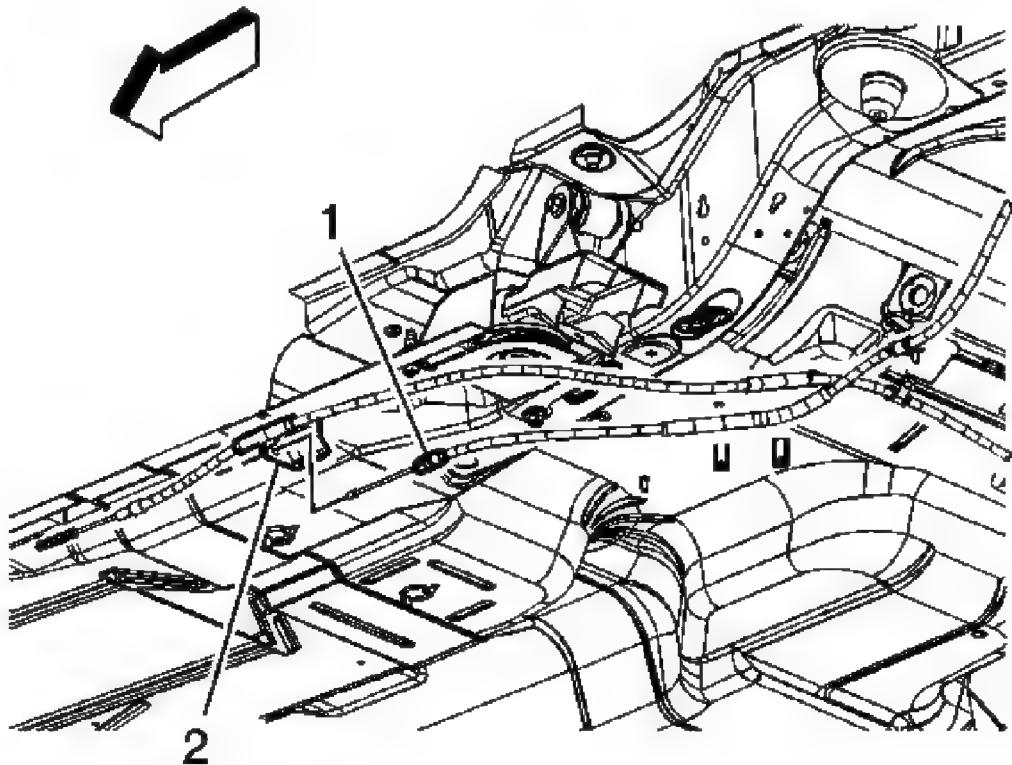


Fig. 10: Removing/Installing Left Park Brake Cable
Courtesy of GENERAL MOTORS CORP.

6. Using the **J 37043** , remove the left park brake cable (1) from the retaining bracket (2).
See Special Tools.

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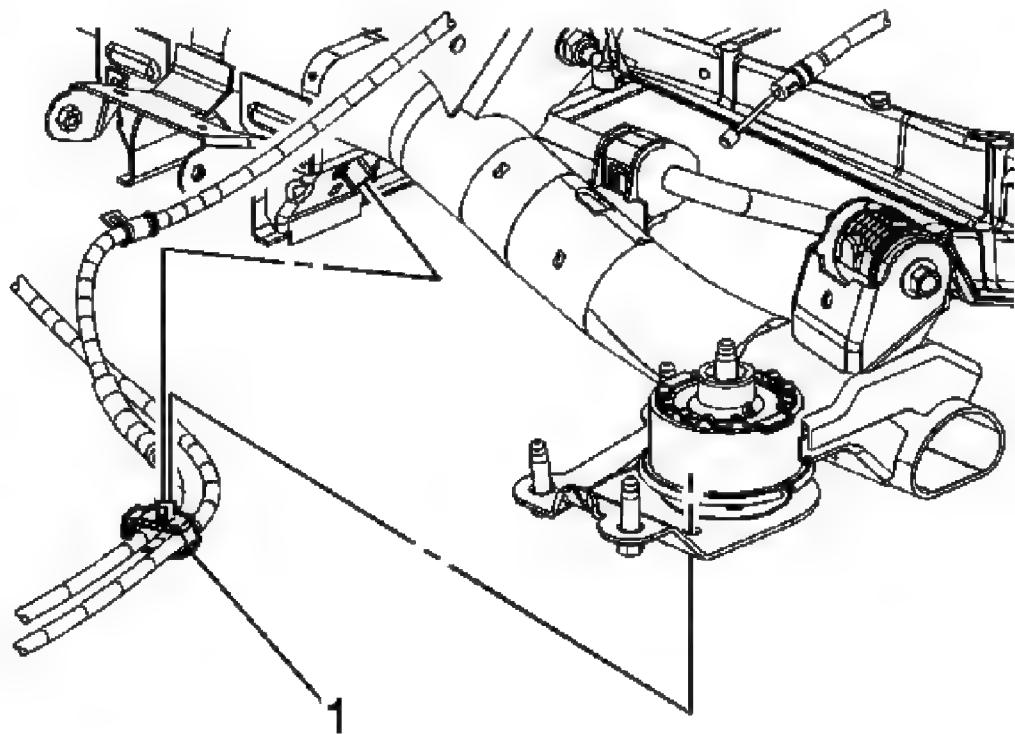


Fig. 11: Identifying Left Rear Brake Cable In The Retainer
Courtesy of GENERAL MOTORS CORP.

7. Remove the left park brake cable from the retainer (1).

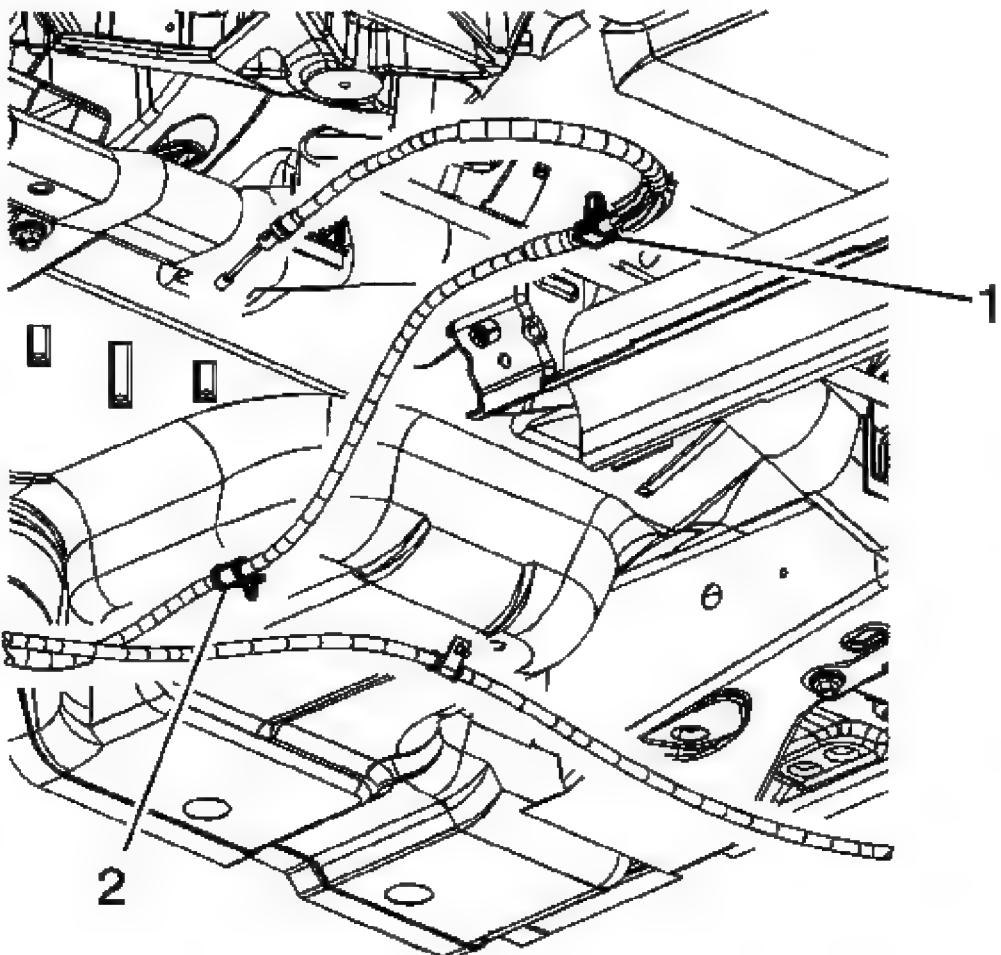


Fig. 12: Locating Cable Retaining Bolt
Courtesy of GENERAL MOTORS CORP.

8. Remove the left rear brake cable from the retainer (1).
9. Remove the left rear brake cable retaining bolt (2).

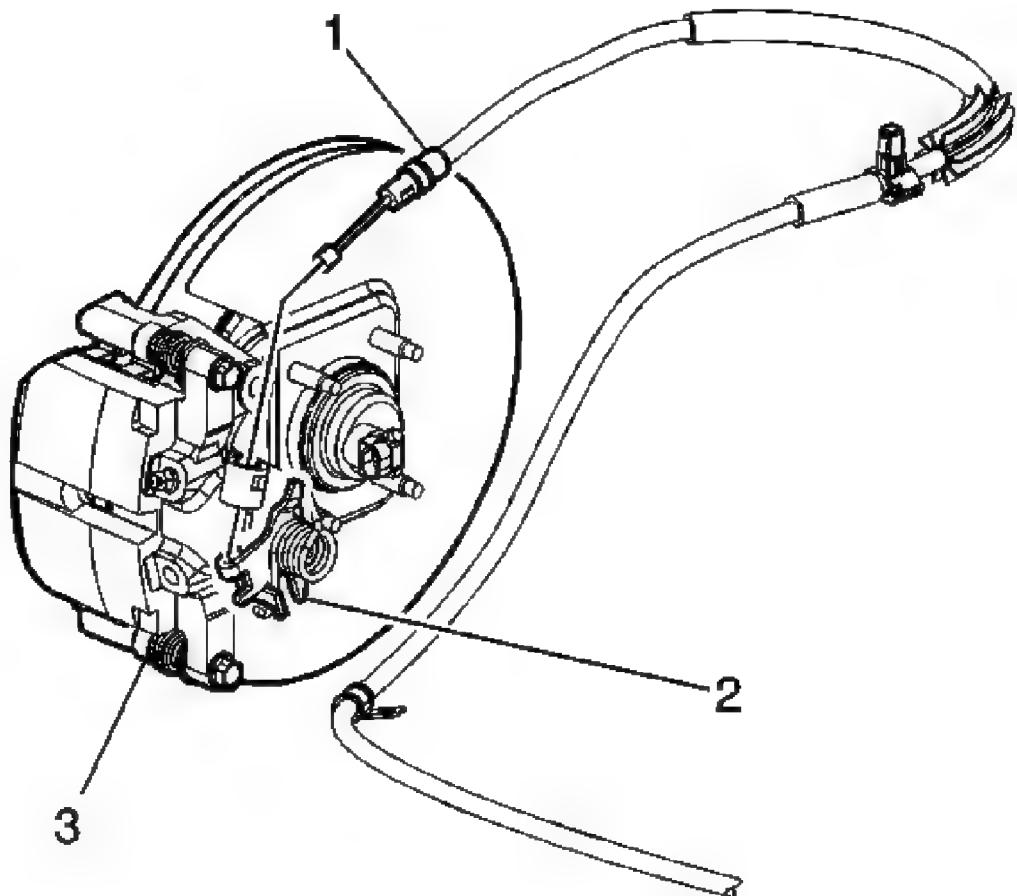


Fig. 13: Identifying Park Brake Cable & Caliper
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Right rear brake caliper shown, left similar.

10. Slide the park brake cable (1) forward and remove it from the park brake actuator lever (2).
11. Remove the park brake cable (1) from the caliper (3).

Installation Procedure

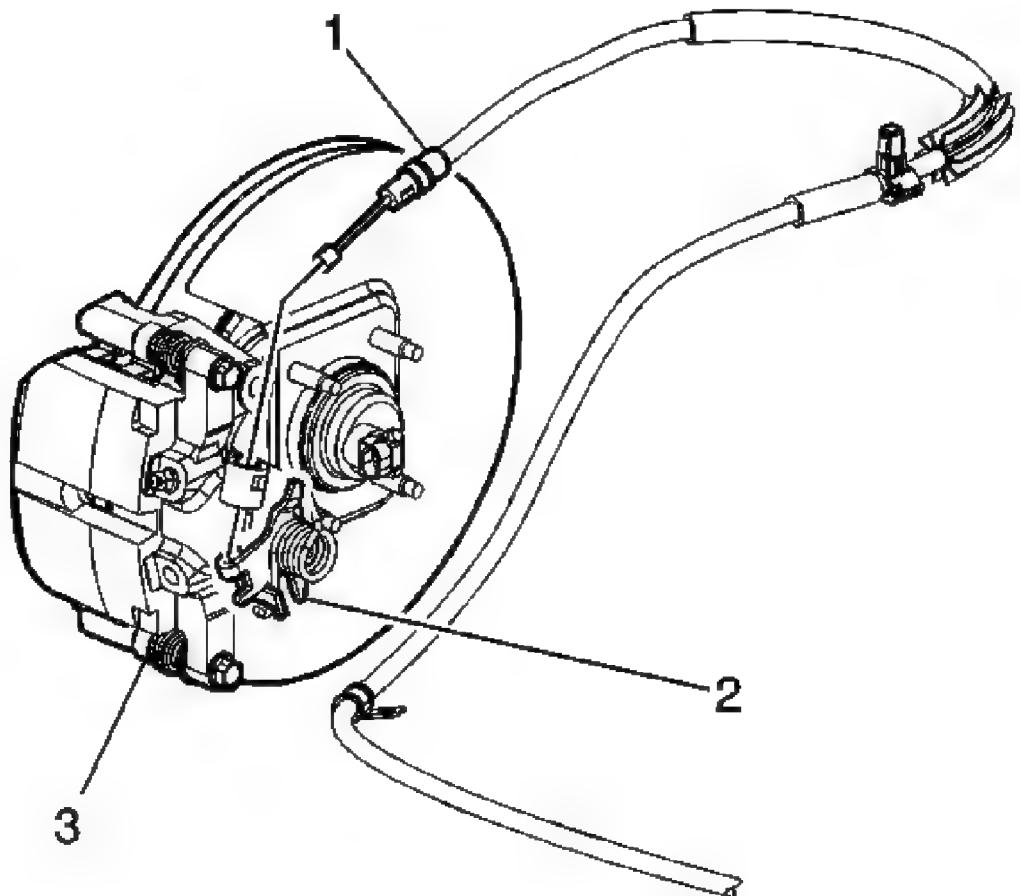


Fig. 14: Identifying Park Brake Cable & Caliper
Courtesy of GENERAL MOTORS CORP.

1. Install the park brake cable (1) into the bracket on the brake caliper (3).
2. Slide the park brake cable forward and install to the park brake actuator lever (2).

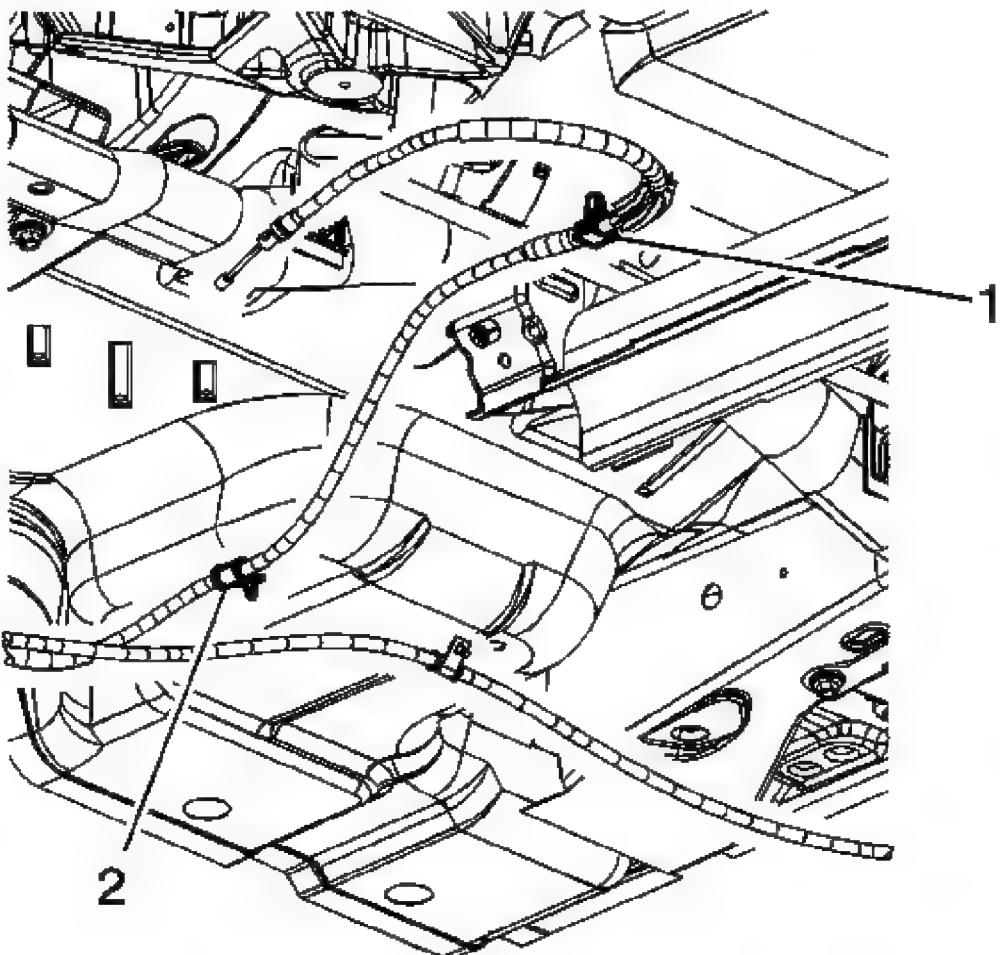


Fig. 15: Locating Cable Retaining Bolt
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

3. Install the retaining bolt (2).

Tighten: Tighten the retaining bolt to 6 N.m (53 lb in).

4. Install the retaining clip (1).

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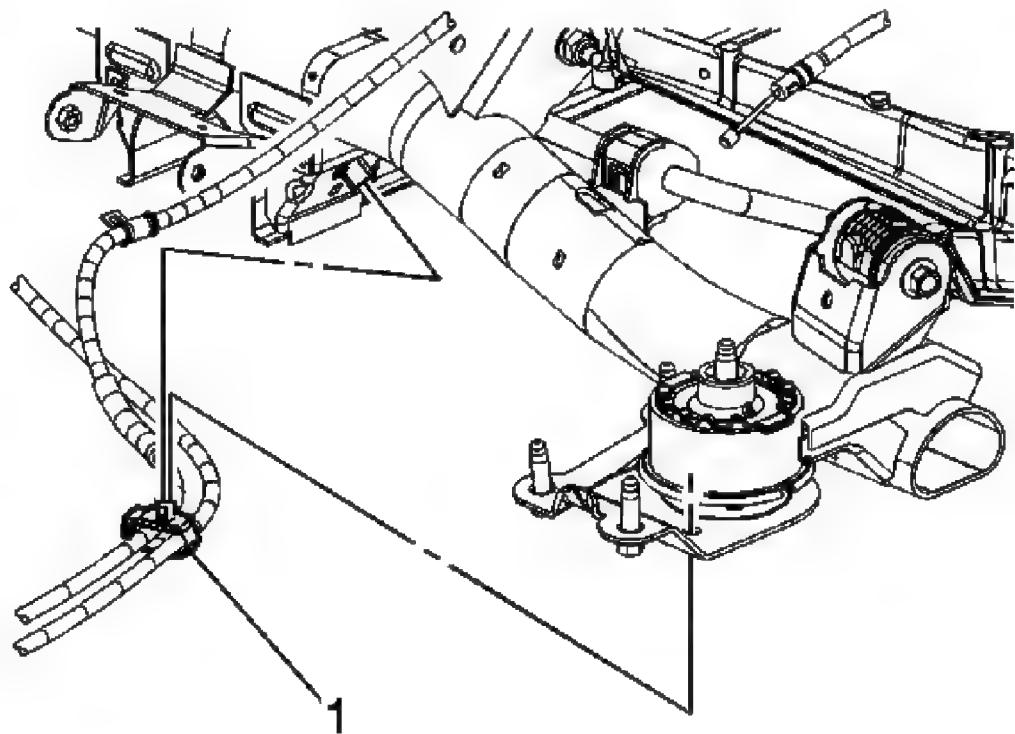


Fig. 16: Identifying Left Rear Brake Cable In The Retainer
Courtesy of GENERAL MOTORS CORP.

5. Install the left rear brake cable in the retainer (1).

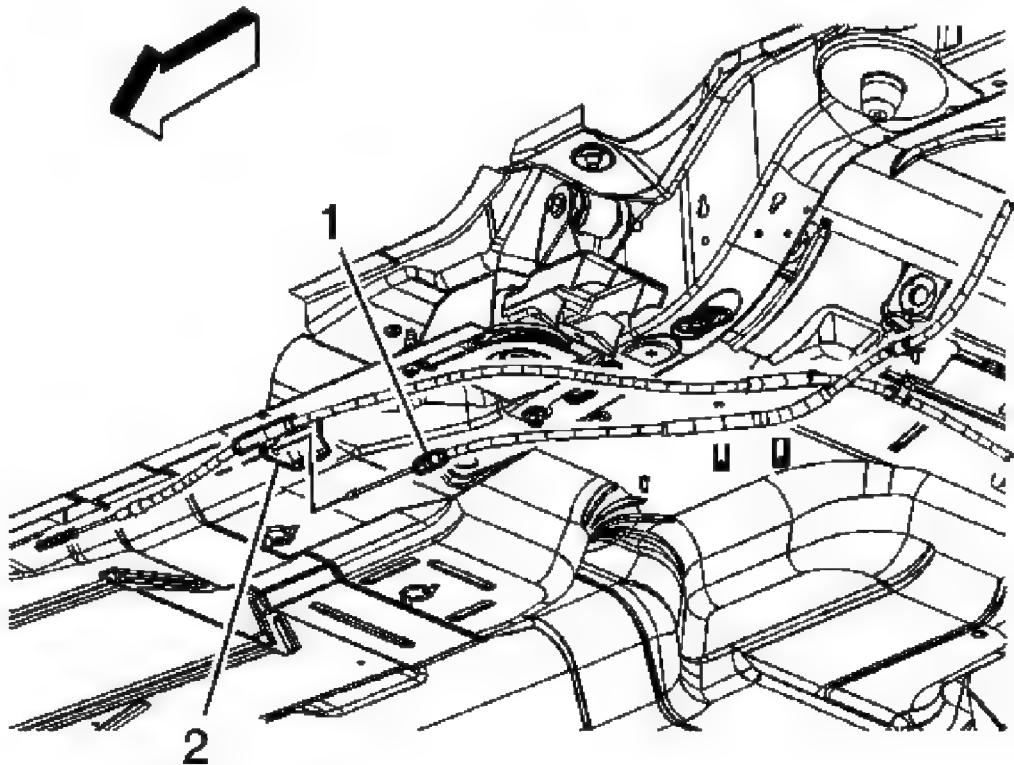


Fig. 17: Removing/Installing Left Park Brake Cable
Courtesy of GENERAL MOTORS CORP.

6. Install the left rear brake cable (1) in the retaining bracket (2).

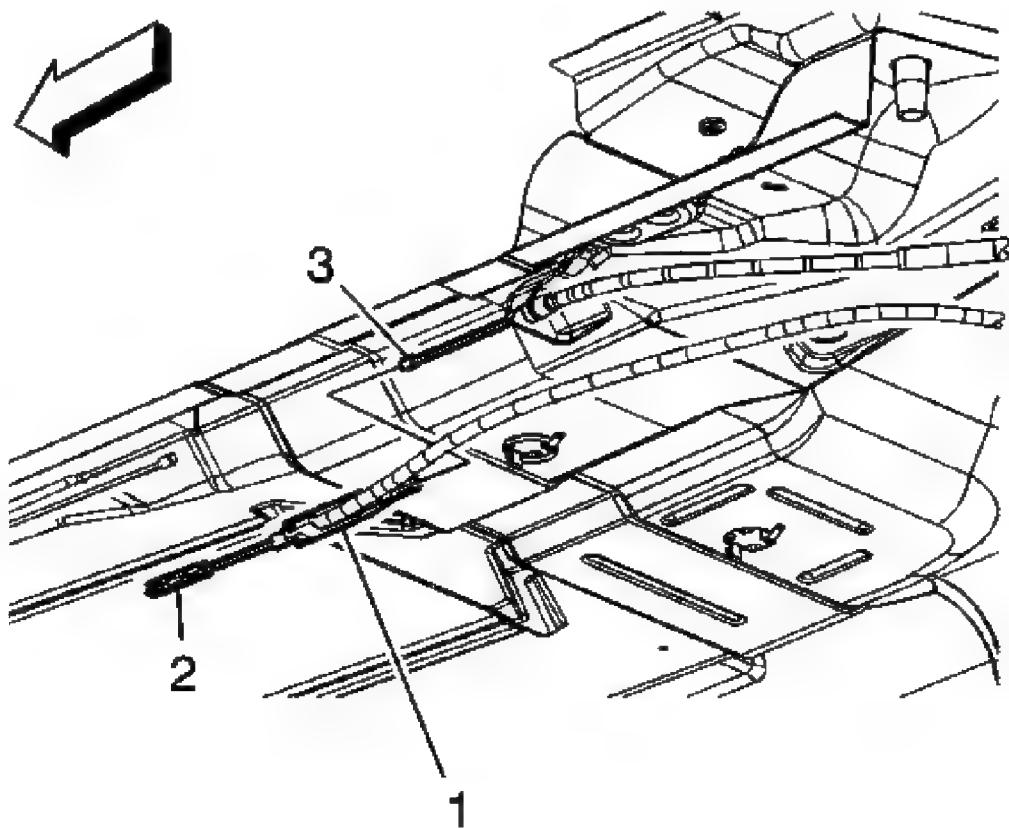


Fig. 18: Removing/Installing Rear Park Brake Cable
Courtesy of GENERAL MOTORS CORP.

7. Install the left rear brake cable (3) to the equalizer (1).

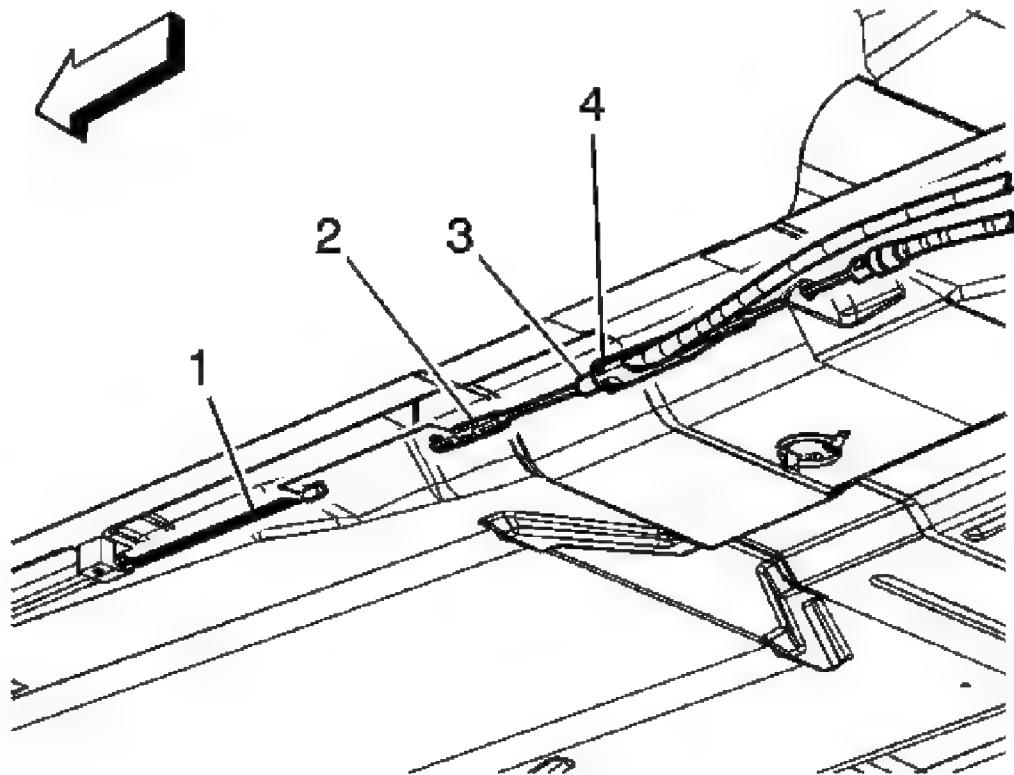


Fig. 19: Removing/Installing Front Park Brake Cable
Courtesy of GENERAL MOTORS CORP.

8. Install the front brake cable (1) in the connector (2).
9. Install the tire and wheel. Refer to [Tire and Wheel Removal and Installation](#) .
10. Lower the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .

PARKING BRAKE REAR CABLE REPLACEMENT - RIGHT SIDE

Removal Procedure

1. Release the park brake.
2. Raise the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
3. Remove the tire and wheel. Refer to [Tire and Wheel Removal and Installation](#) .

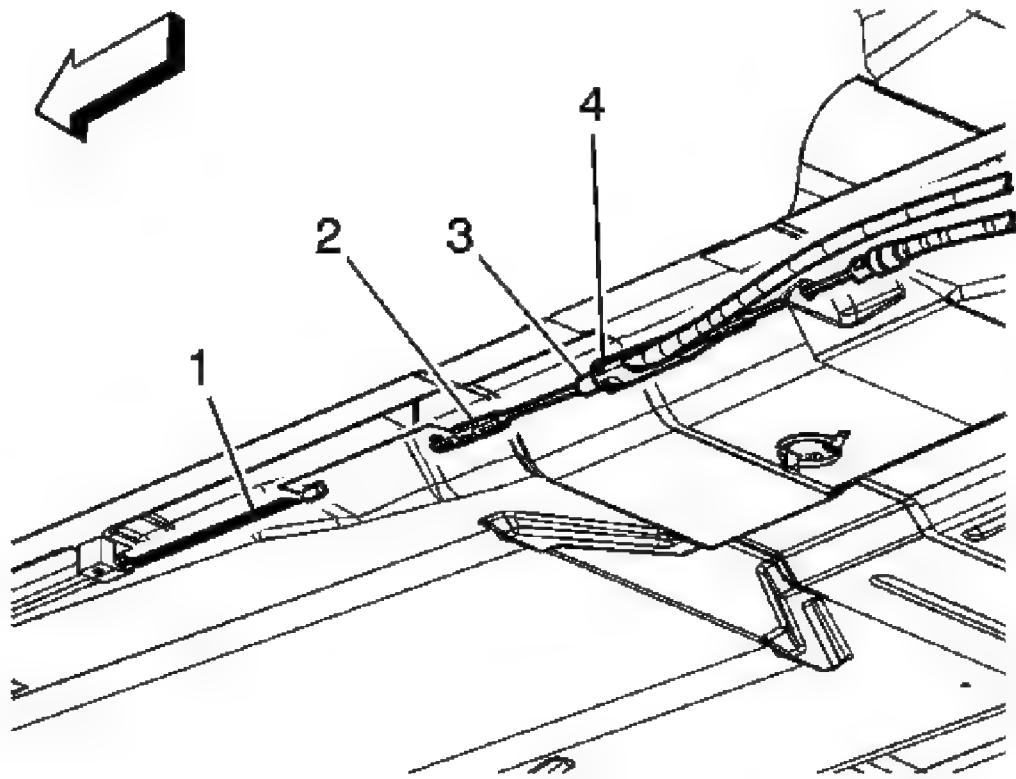


Fig. 20: View Of Right Front Park Brake Cable

Courtesy of GENERAL MOTORS CORP.

4. Remove the front brake cable (1) from the connector (2).

IMPORTANT: If the equalizer (4) is damaged, replace the equalizer.

5. Using the **J 37043**, remove the right rear brake cable (3) from the equalizer (4). See **Special Tools**.

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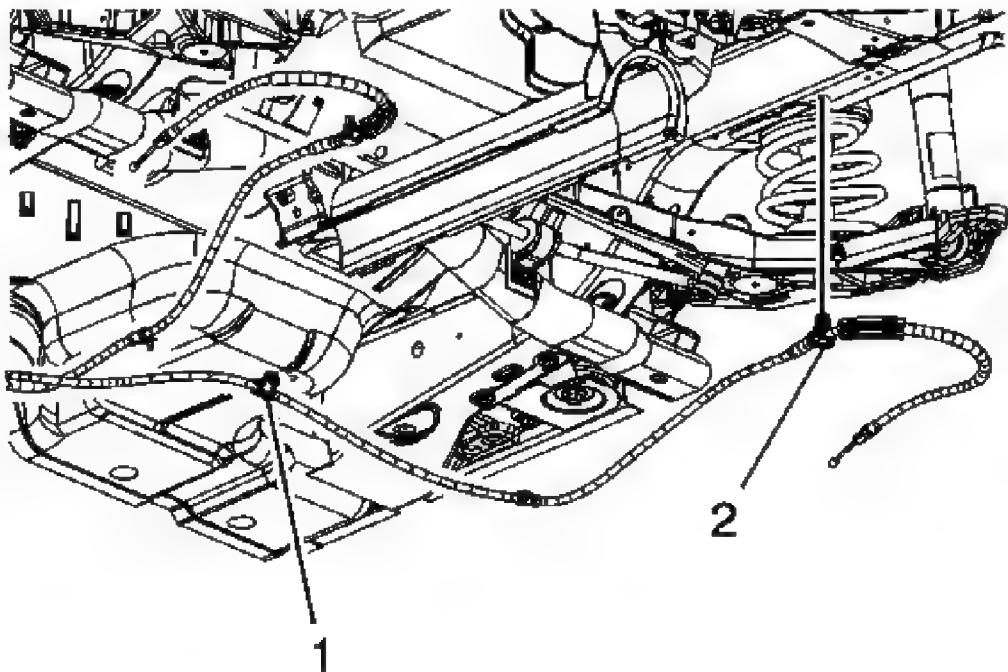


Fig. 21: Removing/Installing Retainer Bolts

Courtesy of GENERAL MOTORS CORP.

6. Remove the 2 retaining bolts (1) and the retaining clip (2) from the chassis.

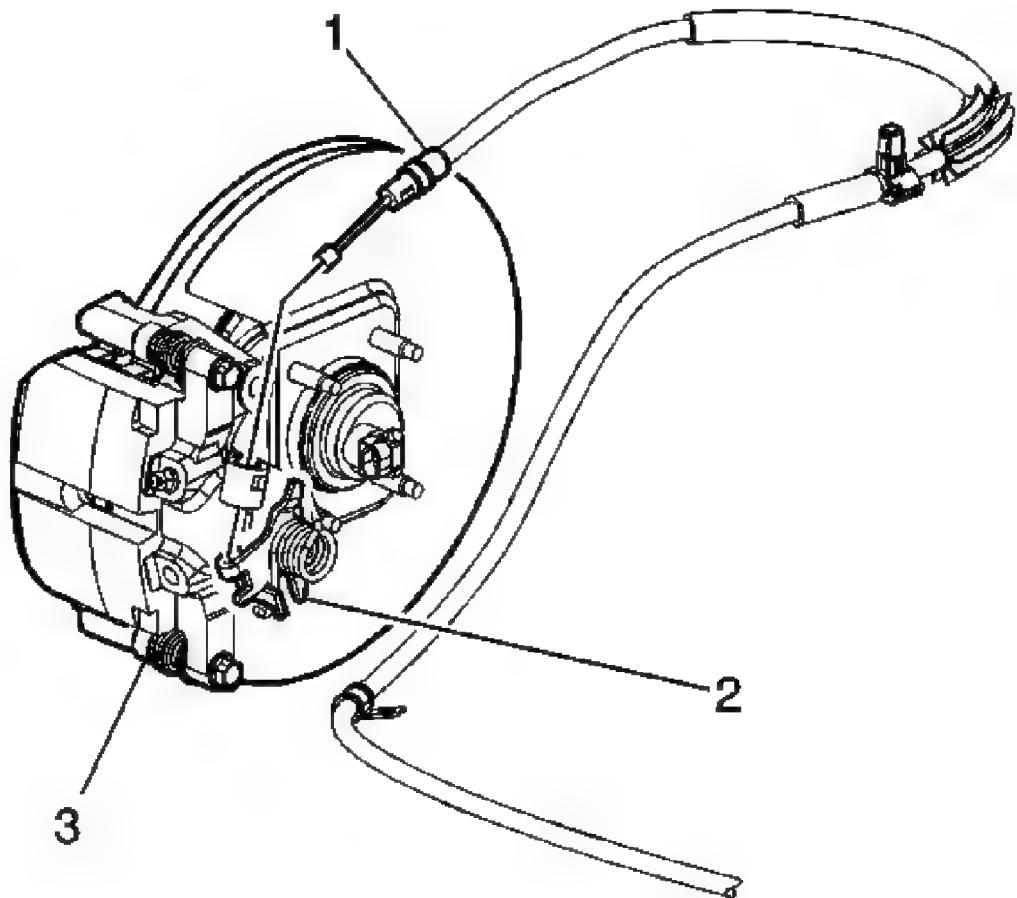


Fig. 22: View Of Rear Caliper & Brake Cable Components
Courtesy of GENERAL MOTORS CORP.

7. Slide the park brake cable (1) forward and remove it from the park brake actuator lever (2).
8. Remove the park brake cable (1) from the caliper (3).

Installation Procedure

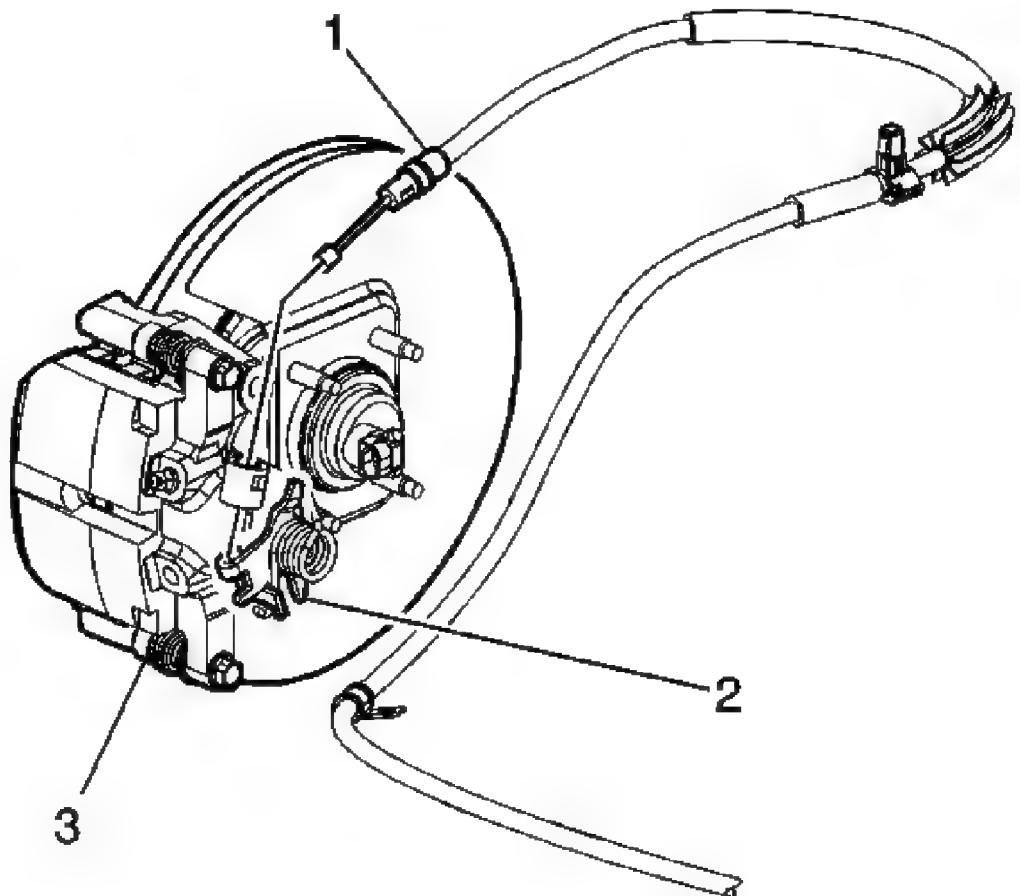


Fig. 23: View Of Rear Caliper & Brake Cable Components
Courtesy of GENERAL MOTORS CORP.

1. Install the park brake cable (1) into the bracket on the brake caliper (3).
2. Slide the park brake cable forward and install to the park brake actuator lever (2).

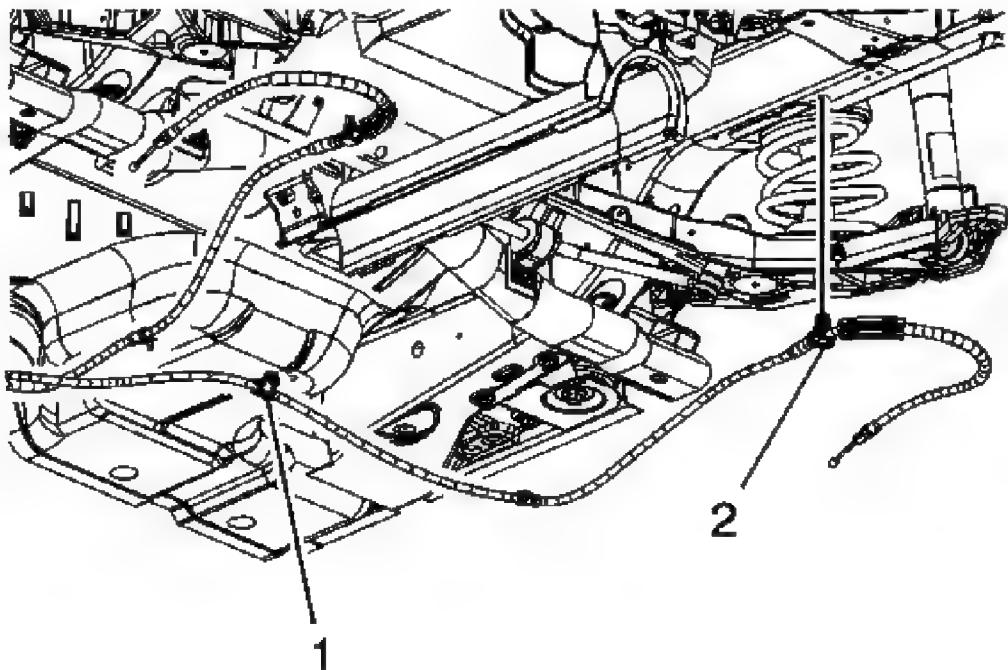


Fig. 24: Removing/Installing Retainer Bolts

Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

3. Install the 2 retaining bolts (1).

Tighten: Tighten the retaining bolts to 6 N.m (53 lb in).

4. Install the retaining clip (2).

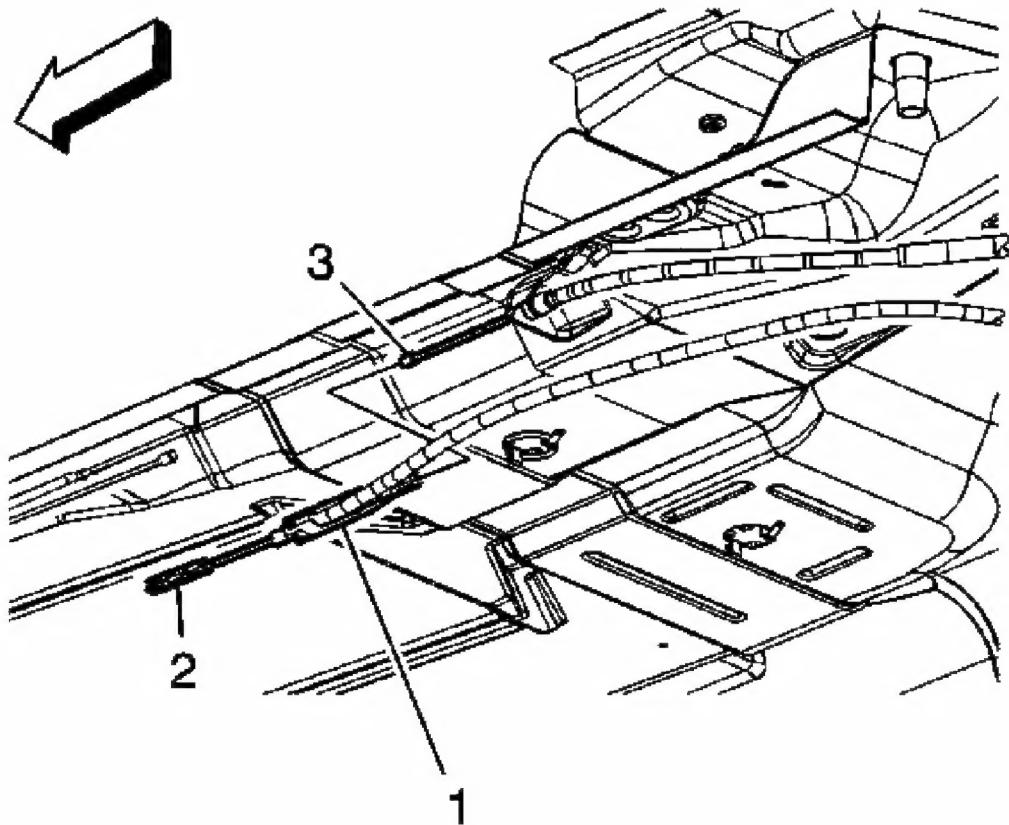


Fig. 25: View Of Left Park Brake Cable & Equalizer
Courtesy of GENERAL MOTORS CORP.

5. Install the left park brake cable (2) to the equalizer (1).

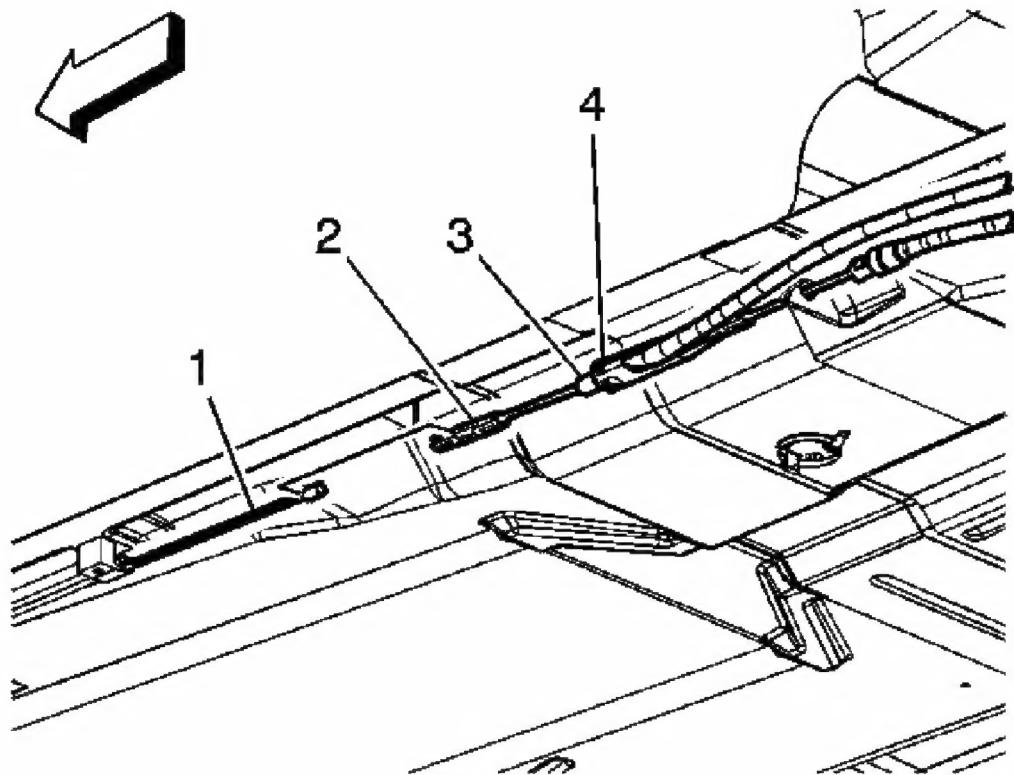


Fig. 26: View Of Right Front Park Brake Cable

Courtesy of GENERAL MOTORS CORP.

6. Install the right rear brake cable (4) to the equalizer (3).
7. Install the front brake cable (1) in the connector (2).
8. Install the tire and wheel. Refer to [Tire and Wheel Removal and Installation](#).
9. Lower the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

DESCRIPTION AND OPERATION

PARK BRAKE SYSTEM DESCRIPTION AND OPERATION

IMPORTANT: Plastic coated park brake cables do not need periodic lubrication.

Coated park brake cables are used to reduce apply effort and increase corrosion protection. The cables are coated with a plastic material which slides against nylon seals inside the conduit end fittings.

The park brake lever has an indicator switch which closes when the park brake is set, thus illuminating the red BRAKE lamp.

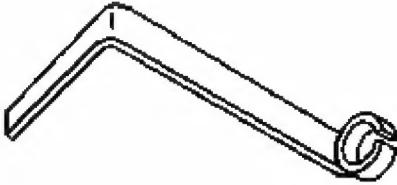
Park brake lever/cable adjustment is automatic. Cycling the lever two to three times should result in properly adjusting the park brake after disabling it for service.

Park brake application is completely independent of the hydraulic brake system. The park brake system is a mechanical system which operates the rear disc brakes through the calipers. The system is activated by depressing the park brake pedal, which applies the rear disc brakes via cables. When the park brake is set and the ignition switch is on, the BRAKE warning lamp on the instrument panel will be on. The park brake is released by pushing the pedal down until a click is heard and then releasing. The pedal will click again and the BRAKE lamp in the instrument panel will go out when the park brake system is fully released.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/Description
	J 37043 Parking Brake Cable Release Tool

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